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# LIVESTOCK

HOW STOCK RAISING BUILDS UP THE SOIL.

Written for The Journal of Agriculture by H. H. Shepard.

Many farmers do not stop to think or realize that when a crop yield is doubled the net profits on growing that crop are increased from four to ten fold, and sometimes more, and that manuring the land means the same thing as acquiring more area.

The keeping and breeding of live stock on the farm may be made a profitable industry in itself, yet it may become doubly profitable if the manure made by keeping the animals is all saved and intelligently applied to the land. One farmer who makes dairying a strong branch of his farming told me recently that he valued the butter fat as one-half, the skim milk as one-fourth, and the manure as one-fourth in counting his dairy profits. The butter fat he sold to the creamery, the skim milk was fed to pigs, and the manure applied to his corn ground. He took me to his corn field and showed me his 1008 corn crop growing on soil fertilized with stable manure. I knew the land before he began to farm it, and it was very thin and considered almost worthless. His corn this year will average over 50 bushels to the acre on the same ground that previously produced only 25 bushels. This extra 25 bushels of corn per acre at the present price, 70 cents a bushel, gives a net gain over previous crops of \$17.50, or more than a dollar a load for the manure for the first year, he having applied about 15 loads per acre. His creamery check amounted to about \$30 per month, the cows made about half a load of manure each day, so that if the skim milk was worth \$15 a month for pig ? 1, then \$15 is about the right price for the manure, the total dairy products making \$60 per month, the manure being one-fourth of the value. But this is too low for the proportional value of the manure since its effects will be shown for three or four years, and the total increase in crops from the soil upon which it was placed will be at least double that for the first year. In some cases the crop on the second year after an application of stable manure is greater than that of the first.

This same farmer in question has an 80-acre farm and keeps about 12 cows, four work horses, two to four colts, 20 sheep, and about 30 pigs all the time, besides a good sized flock of chickens. The making and use of manure from all of his domestic animals, from the horses to the chickens, is a science with him. He makes through careful bedding and other means every pound of manure the animals are capable of producing, and he saves and uses every pound that is made. He grows wheat and oats for both grain and straw, and all the straw not used for feed goes for bedding and absorbing liquid manure. It is all passed through the stalls under the animals and then applied to the corn ground, which, after being cultivated with oats, then wheat, then timothy, then pasture, each one year and back to corn again. He has so improved the fertility of his farm through keeping animals and making and using manure that it has more than quadrupled in actual money value.

The enriching of the soil through the keeping of animals is both cheap and easy. Much of the manure does not have to be handled at all. Fields that are pastured receive full benefit of both solid and liquid animal excrements without the expenditure of manual labor. Manure from barn lots and feed lots if properly located will wash out over the fields and become of immediate value without effort on the part of the farmer.

### Coarse Feeds Utilized.

On every general farm a great amount of rough feeds are produced that have no profitable market value. Without animals they can not be used for feed, and their fertilizing value without treatment is small, With animals these rough feeds may be turned to profit through the animals, and portions which are not eaten make good bedding and the richest of fertilizers after being mixed with the animals' droppings. It is difficult to sell out or wheat straw or corn stover, but these same rough feeds will make fully half the rations for sheep, cattle, horses, and colts over winter. representing good money in animal gains, besides the value of the manure. Animals stalled through the winter require bedding. The bedding makes the animals comfortable and healthy, it absorbs the liquid manure, the best part of it, and it becomes of great value when applied to the land in supplying actual plant foods, preventing the soil from washing, and improving its physical nature by making it light and porous for the admission of air and the growth of beneficial soil bacteria.

Commercial fertilizers are a good thing, but their use on soils deficient in humus is not to be commended. Without humus in the soil most of them seem to act as a whip to a tired horse, and leave them after a year or two in a worse condition than before. Stable manure is one of the best known substances for supplying soil humus. It makes the soil warm, friable, retentive of moisture in dry weather, porous, light, and easy to work. Phosphates, for instance, can be applied with stable manure and the value of both materially increased.

Growing crops year after year and selling them from the farm will in time exhaust the soil regardless of how fertile it was in the beginning The earth may be full of coal, but constant mining will finally exhaust the store; so, the soil may be deep and rich, but constant cropping and selling the crops will surely use it all up after awhile. With stock raising on the farm, and feeding all of the crops to the animals, selling only the condensed, finished product, nearly all of the soil fertility is returned. Where heavy stock raising is practiced and some feeds purchased from outside sources the soil may be actually made to increase in fertility through the farming operations alone without directly buying any fertilizers.

In dairying where bran and other ground feeds are purchased and only the cream or butter sold a farm may be rapidly built up. Butter is a carbon compound, coming almost wholly from water and the air, so that in butter dairying only a few pounds of soil fertility are removed with each ton of butter. If much feed is purchased the loss is restored many hundredfold. The man who wishes to build up poor land can do it no more quickly and with less expense than with a good herd of dairy cows and